

REMARKS/ARGUMENTS

In the Office Action mailed April 29, 2010, claims 1-3 and 5-16 were rejected. In response, Applicant hereby requests reconsideration of the application in view of the proposed amendments and the below-provided remarks. No claims are added or canceled. Applicant submits that the proposed amendments place the present application in condition for allowance or in better condition for appeal.

For reference, a proposed amendment is presented for claim 14. In particular, the proposed amendment for claim 14 is presented to recite claim dependency from claim 13, rather than from claim 1. This proposed amendment is supported, for example, by the subject matter illustrated in Fig. 3.

Claim Rejections under 35 U.S.C. 112, second paragraph

Claim 14 was rejected under 35 U.S.C. 112, second paragraph. Specifically, the Office Action states that the limitations “second inductor” and “common node of the second inductor and the third capacitor” lacks antecedent basis. Applicant appreciates the Examiner’s observation and submits that claim 14 is amended to depend from claim 13, which recites “a second inductor and a third capacitor.” Accordingly, Applicant respectfully requests that the rejection under 35 U.S.C. 112, second paragraph, be withdrawn.

Claim Rejections under 35 U.S.C. 102 and 103

Claims 1-3 and 5-16 were rejected based on one or more cited references. The cited reference(s) relied on in these rejections include:

Kodim (U.S. Pat. No. 7,005,940, hereinafter Kodim)

Fukamachi et al. (U.S. Pat. Pub. No. 2004/0266378, hereinafter Fukamachi)

Koskinen (U.S. Pat. Pub. No. 2002/0086644, hereinafter Koskinen)

Phillips et al. (U.S. Pat. No. 6,765,536, hereinafter Phillips)

In particular, claims 1, 2, 5-7, 9-13, 15, and 16 were rejected under 35 U.S.C. 103(a) as being unpatentable over Kodim in view of Fukamachi. Claim 3 was rejected under 35 U.S.C. 103(a) as being unpatentable over Kodim in view of Fukamachi and further in view of Koskinen. Claim 8 was rejected under 35 U.S.C. 103(a) as being unpatentable over Kodim in view of Fukamachi and further in view of Phillips. However, Applicant respectfully submits that these claims are patentable over Kodim, Fukamachi, Koskinen, and Phillips for the reasons provided below.

Independent Claim 1

Claim 1 is patentable over the combination of Kodim and Fukamachi because the combination of cited references is improper and does not teach all of the limitations of the claim. Claim 1 recites:

Antenna switch which is arranged to alternately operate in a receive mode and a transmit mode, the antenna switch comprising:

an adaptive filter for coupling a signal processing means to an antenna during the receive mode and for electrically insulating the signal processing means from the antenna during the transmit mode, wherein the adaptive filter comprises a circuit arrangement of at least one capacitor and at least one inductor, wherein:

a group of circuit components of the circuit arrangement implements a transmit filter stage with a first passband during the transmit mode, wherein the first passband is a band-pass passband; and

a subset of the group of circuit components of the circuit arrangement implements a receive filter stage with a second passband during the receive mode.

(Emphasis added.)

In contrast to the language of the claim, the combination of Kodim and Fukamachi does not teach all of the limitations of the claim. For reference, the reasoning in the Office Action acknowledges that Kodim does not teach the indicated limitations. Office Action, 4/29/10, page 4. Hence, the reasoning in the Office Action relies on Fukamachi as purportedly teaching the indicated limitations. *Id.* However, Fukamachi also fails to teach the transmit and receive filter stages, as recited in the claim.

In support of the rejection, the reasoning in the Office Action specifically states:

Fukamachi et al. disclose the adaptive filter (fig. 9) comprises a circuit arrangement of at least one capacitor and at least one inductor (LPF1, LPF2 as disclosed in fig. 10), wherein: a group of circuit components of the circuit arrangement implements a transmit filter stage with a band-pass passband (DCS Tx frequency: 1710 ~ 1785 MHz as disclosed in paragraph 98); and a subset of the group of circuit components of the circuit arrangement implements a receive filter stage (Dip as disclosed in fig. 10).

Office Action, 4/29/10, page 4 (underlining added).

While the reasoning in the Office Action is not exactly clear what structure or the extent of circuitry of Fukamachi that purportedly implements a transmit filter stage, none of the filtering elements teaches all of the limitations of the claim. Fukamachi essentially describes five separate filtering elements, which are shown in Fig. 9. The following table lists and summarizes the functionality of these five separate filtering elements.

FILTERING ELEMENT	FUNCTIONALITY
Low-pass filter (LPF1) on the EGSM Tx line	LPF1 permits the EGSM transmission signal (880-915 MHz) to pass through while sufficiently attenuating frequencies twice or more (approx. > 1830 MHz) the EGSM transmission signal. Fukamachi, paragraph 99.
Low-pass filter (LPF2) on the DCS Tx line	LPF2 permits the DCS transmission signal (1710-1785 MHz) to pass through while sufficiently attenuating frequencies twice or more (approx. >3570 MHz) the DCS transmission signal. Fukamachi, paragraph 99.
Notch filter (NF) between the DIP and the switch SW2	NF has an attenuation peak at a frequency two or three times (approx. 3960-5940 MHz) that of the W-CDMA transmission signal (1920-1980 MHz) for reducing harmonic strain generated by the second high-frequency switch SW2. Fukamachi, paragraph 100. (For general reference, a notch filter is simply a band-stop filter with a narrow stopband.)

Serial resonance circuitry (SRC1) within the DIP for the EGSM Rx signals	The serial resonance circuit formed by L2 and C1 has a resonance frequency in the DCS and W-CDMA bands, with an attenuation peak at 1.9 GHz. Fukamachi, paragraph 102. (For reference, this is another type of band-stop filter.)
Serial resonance circuitry (SRC2) within the DIP for the DCS/W-CDMA Rx signals	The serial resonance circuit formed by L4 and C3 has a resonance frequency in the EGSM bands, with an attenuation peak at 0.9 GHz. Fukamachi, paragraph 102. (For reference, this is another type of band-stop filter.)

The reasoning in the Office Action appears to rely on some ambiguous combination of the functionality of these filtering elements, even though the descriptions of these filtering elements are insufficient to teach all of the limitations of the claim. Specifically, none of these filtering elements teaches a group of circuit components of the circuit arrangement implements a transmit filter stage and a subset of the group of circuit components of the circuit arrangement implements a receive filter stage.

As a matter of clarification, the LPF1 and LPF2 elements are only used for filtering transmission signals. This is apparent because the LPF1 and LPF2 elements are only implemented on the Tx lines. Additionally, it should be noted that the LPF1 and LPF2 elements do not incorporate any portion of the other three filtering elements SRC1, SRC2, or NF. Consequently, neither the LPF1 nor the LPF2 can be construed as a group of circuit components that implements a transmit filter stage, within the context of the claim, because there is no subset of the LPF1 or the LPF2 that is used for or otherwise implements a receive filter stage. Therefore, the description of the LPF1 and LPF2 in Fukamachi fails to teach a group of circuit components of the circuit arrangement which implements a transmit filter stage and a subset of the group of circuit components of the circuit arrangement which implements a receive filter stage.

In contrast to the LPF1 and LPF2 elements, the SRC1 and the SRC2 filtering elements are only used for filtering received signals. (For reference, the designations SRC1 and SRC2 are used in this response for convenience, but are not used within the

description of Fukamachi.) Specifically, the SRC1 is only used on the EGSM lines to filter out signals having a frequency in the DCS and W-CDMA bands, by attenuating (i.e., band-stopping) most sharply at approximately the DCS and W-CDMA bands. Similarly, the SRC2 is only used on the DCS and W-CDMA lines to filter out signals that have a frequency in the EGSM band, by attenuating (i.e., band-stopping) most sharply at approximately the EGSM band. Additionally, it should be noted that the SRC1 and the SRC2 elements are not incorporated into any portion of the other three filtering elements LPF1, LPF2, or NF. Consequently, neither the SRC1 nor the SRC2 can be construed as a receive filter stage, within the context of the claim, that is a subset of group of circuit components implemented for a transmit filter stage. Therefore, the description of the SRC1 and the SRC2 in Fukamachi fails to teach a group of circuit components of the circuit arrangement which implements a transmit filter stage and a subset of the group of circuit components of the circuit arrangement which implements a receive filter stage. Furthermore, it should be noted that the SRC1 and the SRC2 cannot be construed as a transmit filter stage, within the context of the claim, because the SRC1 and the SRC2 implement band-stop filters, rather than band-pass filters.

In contrast to all of the other filtering elements, the NF is not used for filtering transmitted or received signals. As explained in Fukamachi, the NF is only used to reduce harmonic strain resulting from the adjacent switch SW2. Thus, the NF is not used to implement a transmit filter stage because the NF is not used for filtering transmission signals. Similarly, the NF is not used to implement a receive filter stage because the NF is not used for filtering received signals. Therefore, the description of the NF in Fukamachi also fails to teach a group of circuit components of the circuit arrangement which implements a transmit filter stage and a subset of the group of circuit components of the circuit arrangement which implements a receive filter stage. Furthermore, it should be noted that NF cannot be construed as a transmit filter stage, within the context of the claim, because the NF implement a band-stop filter, rather than a band-pass filter.

Therefore, despite the general assertions presented in the Office Action, the description of Fukamachi is insufficient to teach all of the limitations of the claim because Fukamachi does not teach a group of circuit components that implement a transmit filter stage, of which a subset of the group of circuit components implements a

receive filter stage. Consequently, the combination of Kodim and Fukamachi does not teach all of the limitations of the claim because the combination of cited references does not teach a group of circuit components of the circuit arrangement which implements a transmit filter stage and a subset of the group of circuit components of the circuit arrangement which implements a receive filter stage, as recited in the claim. Accordingly, Applicant respectfully asserts claim 1 is patentable over the combination of Kodim and Fukamachi because the combination of cited references does not teach all of the limitations of the claim.

Dependent Claims

Claims 2, 3, and 5-16 depend from and incorporate all of the limitations of independent claim 1. Applicant respectfully asserts claims 2, 3, and 5-16 are allowable based on allowable base claims. Additionally, each of claims 2, 3, and 5-16 may be allowable for further reasons, as described below.

Claim 5

In regard to claim 5, Applicant respectfully submits that claim 5 is patentable over the combination of Kodim and Fukamachi because the combination of cited references does not teach all of the limitations of the claim. For reference, claim 5 recites

Antenna switch according to claim 1, wherein the second passband comprises a high-pass passband.
(Emphasis added.)

In support of the rejection, the reasoning in the Office Action relies on the description of the DIP in Fukamachi. However, the DIP does not implement a high-pass passband. As explained above, the DIP of Fukamachi merely implements serial resonance circuits that effectively function as band-stop filtering elements. The implementation of a high-pass passband filter is different from a band-stop filter because of the fundamental characteristics of each type of filtering element. Therefore, the description of the DIP in Fukamachi is insufficient to teach implementing a high-pass passband.

Therefore, the combination of Kodim and Fukamachi does not teach all of the limitations of the claim, despite the assertions in the Office Action, because Fukamachi does not teach a high-pass bandpass implemented in conjunction with a receive filter stage. Accordingly, Applicant respectfully asserts claim 5 is patentable over the combination of Kodim and Fukamachi because the combination of cited references does not teach all of the limitations of the claim.

CONCLUSION

Applicant respectfully requests reconsideration of the claims in view of the proposed amendment and the remarks made herein. A notice of allowance is earnestly solicited.

At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account **50-4019** pursuant to 37 C.F.R. 1.25. Additionally, please charge any fees to Deposit Account **50-4019** under 37 C.F.R. 1.16, 1.17, 1.19, 1.20 and 1.21.

Respectfully submitted,

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